

OUTPUT CONTROL METHOD AND APPARATUS, AND STORAGE MEDIUM

BACKGROUND OF THE INVENTION

The present invention relates to an output control method and an apparatus for controlling output of image data imaged, for example, by a digital camera, and a storage medium in which a control program for controlling this output control apparatus is stored.

Generally, a television image may have a resolution lower than that of a printed image, but it must be displayed at a higher speed. Image data imaged by a digital camera (digital camera data) has a thumbnail image for such an application, and in some cases, this thumbnail image is used as display data to be displayed on a television receiver. That is, a piece of image information includes main image data having an original resolution and data of a thumbnail image that is a thinned image thereof, and mainly, the former is used as data to be printed and the latter is used as data to be displayed on a television receiver or the like.

In the above described thumbnail image, aspect ratios are generally specified in a standard. However, the aspect ratio of the above described main image is not specified. In the case where the aspect ratios of the above described main image and the above described thumbnail image are different, for example, in the case

where a wide image is imaged, as shown in Fig. 3, an image in which a thinned image 302 of a main image is arranged in an external shape 301 with a specified aspect ratio is formed as a thumbnail image. Between 5 the external shape 301 with the specified aspect ratio and the thinned image 302 of the main image, a black data (black frame) is put.

In the case where such a thumbnail image is used as data to be displayed on a television receiver or the 10 like, when the whole of the thumbnail image is displayed as it is, there has been such a problem that the display image is not difficult to see since it is displayed together with the above described black data (black frame).

15 *INSAI* The present invention is made in view of such a problem included in the above described prior art, and it is an object of this invention to provide an output control method and an apparatus in which when outputting image data on the display on a television 20 receiver or the like, even in the case where the aspect ratios of a thumbnail image and a main image are different, an image with the aspect ratio of the above described main image can properly be outputted on the display.

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SUMMARY OF THE INVENTION

One embodiment of the present invention provides

an output control method for controlling output of
image data imaged by image pick up means, comprising a
display control step of displaying the above described
image data on display means, wherein the above
5 described display control step compares the aspect
ratios of a thumbnail image and a main image in the
above described image data, and it performs the control
so that the above described thumbnail image is used as
display data to be displayed on the above described
10 display means when they are the same, and that the
above described main image is used as the above
described display data when they are different.

BRIEF DESCRIPTION OF THE DRAWINGS

15 Fig. 1 is a block diagram showing the
configuration of a printer system having an output
control apparatus (printer controller) according to one
embodiment of the present invention;

20 Fig. 2 is a block diagram showing the functional
configuration of the output control apparatus according
to one embodiment of the present invention; and

Fig. 3 is a conceptual diagram of a thumbnail
image.

25 DESCRIPTION OF THE PREFERRED EMBODIMENTS

IN 3a 2> One embodiment of the present invention will be
described below by referring to drawings.

Fig. 1 is a block diagram showing the configuration of a printer system having an output control apparatus (printer controller) according to the present embodiment.

5 *INS A3*) In the above described figure, reference numeral 101 denotes a digital camera that is image pick up means, and reference numeral 102 denotes a memory card, which keeps image data imaged by the digital camera 101 and can be removably attached to the above described 10 digital camera 101. Reference numeral 103 denotes a printer controller that is an output control apparatus of the present invention, which reads in the image data kept in the memory card 102 and controls the output of the read-in image data. Reference numeral 104 denotes 15 a television receiver (TV) as display means, which is made of a Cathode Ray Tube: CRT, a Liquid Crystal Display: LCD or the like, and is connected to the printer controller 103 to be controlled by the above described printer controller 103, and outputs the image 20 data on the display. Reference numeral 105 denotes a printer, which is connected to the printer controller 103, and is controlled by the above described printer controller 103 to outputs the image data on the printer.

25 *INS A4*) The printer controller 103 has a slot into which
cont the memory card 102 is inserted, and it displays the image data kept in the memory card 102 on the

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television receiver 104 according to the operation of a user, and in the meantime, it performs the control so that the image data is outputted on the printer 105. The image data from the digital camera 101 conforms to a standard such as DCF, CIFF, Exif, and on the basis of the specifications thereof, the printer controller 103 performs analysis and processing.

Fig. 2 is a block diagram showing an example of the functional configuration of the printer controller 103.

As shown in the above described figure, the printer controller 103 includes an operation control part 201, a user interface control part 202, a control panel 203, a memory card I/F (interface) 204, a file system 205, image data analysis part 206, a TV display control part 207, a TV display renderer 208, a printing control part 209, and a printing renderer 210.

The TV display control part 207 is connected to the TV 104, and the printing control part 209 is connected to the printer 105.

Now, the operation of the printer controller 103 with the above described configuration will be described.

The operation control part 201 performs the integrated control according to the operation of the user through the user interface control part 202 and the control panel 203. The user inserts a memory card

102 into the slot, and the image data analysis part 206 analyzes the image data through the memory card I/F 204 and the file system 205.

Then, in the case where the TV display is
5 performed, the TV display control part 207 reads in display image data from the image data analysis part 206, and renders the display image data by the TV display renderer 208, and outputs it to the TV 104.

INS 05 Furthermore, in the case where the printing is
10 performed, the printing control part 209 reads in printing image data from the image data analysis part 206, and forms the printing image data by the printing renderer 210, and outputs it to the printer 105.

Now, the formation method of a display image data
15 that is the essential point of the present invention will be described. First, the information on the aspect ratios of a thumbnail image and a main image is obtained from the image data analysis part 206, and these are compared with each other. Then, when they
20 are the same, the thumbnail image is used as the display image data as it is, and when they are different, one of the following methods (1) to (3) is selected and performed:

(1) The main image is used as the display image data.

INS 04 (2) The thumbnail image is subjected to a clipping process to have the aspect ratio of the main image.

Cont This process is performed such that for example, the

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centers of the thumbnail image and the main image are matched to each other, and the upper and lower parts or the left and right parts of the thumbnail image are cut off so that it has the same aspect ratio as the main image.

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(3) The clipping process method is determined from the information on the type of a digital camera 101 used for the imaging, and the clipping process is performed. For example, in the case where the aspect ratios of a 10 thumbnail image and a main image are different, there can be some cases where the centers of the thumbnail image and the main image are also different. In such cases, the actually imaged data position in the whole 15 of the thumbnail image is determined from the information on the type of the above described digital camera 101, and the clipping process is performed.

As described above in detail, according to the output control method and apparatus of the present invention, the aspect ratios of a thumbnail image and a 20 main image of image data are compared, and when they are the same, the thumbnail image is used as the display data, and when they are different, the main image is used as the display data, and consequently, an image faithful to the main image can be displayed.

25 Furthermore, according to the output control method and apparatus of the present invention, the aspect ratios of a thumbnail image and a main image of

image data are compared, and when they are the same,
the thumbnail image is used as the display data, and
when they are different, the thumbnail image is cut off
to have the aspect ratio of the main image and is used
5 as the display data, and consequently, an image
faithful to the main image can be displayed.

Furthermore, when the above described thumbnail
image is cut off to have the aspect ratio of the main
image, the information on the type of the image pick up
10 means is obtained, so that a position where the
thumbnail image is cut off may be determined, and
consequently, an effective image in the thumbnail image
can surely be displayed.

Furthermore, according to the storage medium of
15 the present invention, the above described output
control apparatus of the present invention can smoothly
be controlled.